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ABSTRACT

This paper suggests that instruction in general and lecturing in particular are too often characterized by dogmatic approaches to content definition and selection. The methods employed by many teachers tend to suggest to students that the teacher is the primary source of knowledge in a given subject area, that answers are either right or wrong, and that all knowledge in the subject area is known and merely waiting to be conveyed to the student. As the world's increasing knowledge accelerates change, however, it is becoming more and more desirable for students to learn how to develop knowledge, how to process new information, and how to determine whether information is valid or invalid within given contexts. To obtain such learning outcomes it may be necessary to replace old methods of teaching facts with new and flexible methods of teaching long-term processes for analyzing, structuring, and utilizing knowledge. A greater understanding of the structure of knowledge by educators should facilitate such an approach. (PGD)

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Discrepancies Between Curricula and Desired Learning Outcomes

Jerome Bruner stated in 1960 that "the first objective of any act of learning, over and beyond the pleasure it may give, is that it should serve us in the future. Learning should not only take us somewhere; it should allow us later to go further more easily." Not only is this our objective for this morning's session, but it's also centrally related to my topic.

There are many models of student learning (Haertel, et al., 1983) that have direct implications for instruction. The models are diverse but share key constructs. All the models have motivational components. Most of them address prerequisite abilities, instructional quality, and outcomes in one way or another. I, like most of you, have many opportunities to observe teaching. What distresses me is that much instruction is not model instruction or even close to it. Not only is it very difficult for me, but students often comment that it is also difficult for them to figure out the purpose of much of the instruction that they encounter. It appears to me that there is an all too frequent poor fit between how we teach, what we teach, and the long-range learning outcomes that we desire. This discrepancy between instruction and desired outcomes is the focal point for the remainder of my comments.

It is almost a truism that the way we evaluate courses influences what students learn. Students certainly adapt their study strategies based on their perception of how they think they will be evaluated. Evaluators must, as a result, have a high regard for the importance of evaluation to learning outcomes. Having said this, we might also consider it to be a truism that instructional process and content directly influence both the nature of learning outcomes and the degree to which they will be attained.

Student's beliefs about which material is important certainly influence what they study. A number of researchers have shown that "students adopt an approach determined by their expectations of what is required of them ... It may be that the current demands of the examination system ... are interpreted by them as requiring mainly the recall of factual information to the detriment of a deeper level of understanding (Marton and Saljo, 1976). These expectations are very important to learning outcomes.

Many of us have noticed increases in the use of case studies, simulations, problem-solving and analytical skill development. Independent learning activities are on the increase. This is encouraging because process does influence outcomes. Gradually, these methods are coming to be recognized as useful avenues for relating past learning to present or soon-to-be encountered problems. For as Benjamin Bloom (1984) has recently stated, "these abilities are stressed because they are retained and used long after the individual has forgotten the detailed specifics of the subject matter taught in the schools." He considers these abilities to be necessary for continuous learning and for coping with a rapidly changing world.

I believe many individuals are being provided with educations that are far too narrow in scope to prepare them for the eventualities that they will confront in their working lives. How can we teach in the present for learning outcomes that will not take place for many years to come? First, we must envision those outcomes. Does the way that knowledge structure is presented by teachers influence outcome attainment? One of the best clues may be contained in a statement made by David Ausubel et al. (1978) as a part of a discussion centering on learning transfer. They suggested that

understanding of the structure of knowledge facilitates transfer of learning in most subject areas. They contended that "the teaching and learning of structure, rather than simply the mastery of facts and techniques, is at the center of the classic problem of transfer." They further suggested that "there are many things that go into learning of this kind, not the least of which are supporting habits and skills that make possible the active use of the materials one has come to understand."

I am suggesting that instruction in general, and lecturing in particular, is too often characterized by dogmatic approaches to content definition and selection. Many lectures are too tightly packed with information that is of questionable usefulness. We seem to forget that the "half life" of facts is getting shorter and shorter with each passing year. We tend to ignore the fact that centrally important points can be lost in lectures that are too tightly packed with information. The bottom line may be that instructional events related to significant course outcomes tend to either get lost in the shuffle occur too infrequently.

Few would question that there is a strong relationship between instructional process and content and learning outcomes. Process and content are key variables. It is probably true that in any given situation, we do get learner growth that is consistent with the direction that would be implied by an examination of these key variables. However, how often do we really sit for the specific purpose of anticipating the kinds of outcomes that we would really like to result from our instruction? Don't we often begin our preparations by asking ourselves the question "What do I want to say today?"

Isn't it, though, learning outcomes that are of overriding importance? I believe that too many instructional events seem to be based on the

assumption that knowledge that is "taught" will somehow be applied; at least we seem to act as though information will be available when needed. Unfortunately, too much instruction appears to have been designed as though forgetting does not occur. If we do envision long range outcomes of instruction, and too often we do not, then we tend to do a poor job of selecting content and activities that can realistically be expected to result in the attainment of those outcomes.

The Structure of Knowledge

Classroom learning has been described by Walberg (1980) as being heavily dependent on four factors: student ability, student motivation, and instructional quantity and quality. Most models of educational performance include constructs that underscore the importance of knowledge structure to achievement. The knowledge structure component is usually described as attitudes toward the subject matter but sometimes it's referred to as general mediating abilities.

The concept of the structure of knowledge is complex. It can be applied to the learner, to the teacher, and to subject matter. It has been suggested that different learners conceptualize knowledge in quite different ways. One can assume that in any given group of individuals there will be a number of differing conceptualizations of how knowledge is structured and we can assume that these will vary from one content area to another.

The ways that individual students envision a body of knowledge will influence their ability to learn and apply the material. To the degree that students view the structure of knowledge in a ways that are different from the way it is viewed by the instructor, then we may see problems. We should probably look for inconsistencies between curriculum content and the desired learning outcomes.

Probably the major reason that the structure of knowledge is important to instruction has to do with the differing maturity levels of students (and sometimes of faculty) with respect to subject areas. Given that individuals do vary in maturity toward subject matter areas, it may be that emphasizing the ways that new material relates to previously learned information, and the ways that the new content can apply to situations that learners will encounter in their futures, may result in learning that is more effective without really changing the basic nature of the instructional process.

There is a growing body of literature about the structure of knowledge. (Weathersby & Tarule, 1980). William Perry's work (1970, 1981) is probably the most well known. His model relates learner's perceptions of the structure of knowledge to their instructional expectations and to their perceived roles as learners.

The "Perry Scheme" suggests that individual's view knowledge in different ways. They make very different assumptions about the nature of knowledge. Some approach an area as though all knowledge in that area is known. Others approach the same area as though only some, though perhaps most of the knowledge in the area is known, but that all is knowable. Still others believe that there is always some degree of uncertainty about what is known and what is unknown, and in fact they seem to recognize that within any given subject matter area, nothing much of anything is really known for sure.

I want to present two vignettes that demonstrate what instruction might look like if it were first couched at the lower, and then at the upper end of the Perry Scheme. From a teacher's perspective instruction aimed at students with a beginning view of the structure of knowledge would be presented as though the knowledge were a collection of information; as

though right or wrong answers existed for almost every question in the area. The instructor would function as a strong authority figure with authority being largely based on the premise that the teacher is the primary source of knowledge. Students would be expected to receive information and to demonstrate, at some point, that they learned the right answers. Peers would not be treated as good sources of knowledge; small group instruction and/or discussions would be almost non-existent. There would probably be a very high degree of structure.

Instruction aimed at students with more advanced, more mature views of knowledge would look quite different. The view of knowledge presented would be that what is "known," is true only in a contextually relative sense; that is, it would be safe to commit to information as being right or wrong, or appropriate or inappropriate only depending upon the specific context(s) in which it was to be applied. The role of the instructor would be largely that of a guide or consultant. The main responsibility of students would be to apply themselves to processing information, concepts, and issues. Peers would be viewed as legitimate sources of information and small groups, debates, and case management exercises would be common.

I am suggesting that many of us, when we are in our instructor or consultant roles, have a tendency to aim content toward students that we apparently believe are operating at the lower end of the knowledge structure continuum. Either that or many of us are ourselves operating at the lower end of the continuum. This would be fine if it was not also true that many of the outcomes that we would like to result from our instruction are actually at the other upper end. This may be the reason that many of us spend so much time presenting factual information and expecting learners to repeat it back to us. Do we do this because we are thinking about our

subject matter areas as though all is known and that all we need to do is teach it. Or do we do this because it's the way we were taught? Perhaps if we were to design instruction aimed slightly higher than where we think our students are with respect to the structure of knowledge, then students might grow more in the directions that we desire.

Teaching is far more that simply conveying facts. What seems true or essential today may not be so tomorrow. It may be that the most realistic and advisable long range instructional outcomes would be the development of realistic sets of: a) attitudes about the substance and structure of the knowledge being presented and; b) performance qualities that are essential to later functioning. Accurate representations by instructors of the existing states of knowlege in particular subject matter areas are important to communicate to students. Such an emphasis would likely increase the reliance on written materials for conveying technical information while, at the same time, decreasing the tendency to cram large volumes of information into limited amounts of time. It would also be consistent with what we know about the way people learn since much information is probably best communicated in written rather than spoken word anyway.

Research suggests that precisely because of learner variability, the ways in which instruction is experienced, at personal levels, will be much less similar than the characteristics of the course or content might suggest. It further suggests that only by providing considerable flexibility in instructional strategies, assignments, and resource use can faculty adequately accommodate students whose learning styles, past experiences, and needs are so dissimilar (Menges, 1981).

Student's need to develop meaningful understandings of the fundamental structure of knowledge within their content areas. If they are to be successful in attaining important long range outcomes they must also learn to restructure and integrate previously learned information and attitudes. A greater understanding of the structure of knowledge by all of us should greatly facilitate this integration.

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